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The hOGG1 Ser326Cys Gene Polymorphism and Breast Cancer Risk in Saudi Population.

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Abstract

The purpose of this study was to test the association between human 8-oxoguanine glycosylase 1 (hOGG1) gene polymorphisms and susceptibility to breast cancer in Saudi population. We have also aimed to screen the hOGG1 Ser326Cys polymorphism effect on structural and functional properties of the hOGG1 protein using in silico tools. We have analyzed four SNPs of hOGG1 gene among Saudi breast cancer patients along with healthy controls. Genotypes were screened using TaqMan SNP genotype analysis method. Experimental data was analyzed using Chi-square, t test and logistic regression analysis using SPSS software (v.16). In silco analysis was conducted using discovery studio and HOPE program. Genotypic analysis showed that hOGG1 rs1052133 (Ser326Cys) is significantly associated with breast cancer samples in Saudi population, however rs293795 (T >C), rs2072668 (C>G) and rs2075747 (G >A) did not show any association with breast cancer. The hOGG1 SNP rs1052133 (Ser326Cys) minor allele T showed a significant association with breast cancer samples (OR = 1.78, $\chi 2 = 7.86$, $p = 0.02024$). In silico structural analysis was carried out to compare the wild type (Ser326) and mutant (Cys326) protein structures. The structural prediction studies revealed that Ser326Cys variant may destabilize the protein structure and it may disturb the hOGG1 function. Taken together this is the first In silico study report to confirm Ser326Cys variant effect on structural and functional properties of hOGG1 gene and Ser326Cys role in breast cancer susceptibility in Saudi population.

KEYWORDS: Breast cancer; OGG1; OGG1 Ser326Cys; Saudi population

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